DIGITAL PROJECTION

USER MANUAL

INSTALLATION AND QUICK-START GUIDE
CONNECTION GUIDE
OPERATING GUIDE
REMOTE COMMUNICATIONS GUIDE

M-Vision Cine 320 3D series

High Brightness Digital Video Projector
16:9 widescreen display

Rev E July 2014

114-617E

About This Document

A serial number is located on the back of the projector. Record it here:

Follow the instructions in this manual carefully to ensure safe and long-lasting use of the projector.

Keep this manual handy for future reference.

Symbols used in this manual

Many pages in this document have a dedicated area for notes. The information in that area is accompanied by the following symbols:

WARNING: this symbol indicates that there is a danger of physical injury to yourself and/or damage to the equipment unless the instructions are closely followed.

NOTE: this symbol indicates that there is some important information that you should read.

Product revision

Because we at Digital Projection continually strive to improve our products, we may change specifications and designs, and add new features without prior notice.

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M-Vision Cine 320 3D series

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Rev E July 2014

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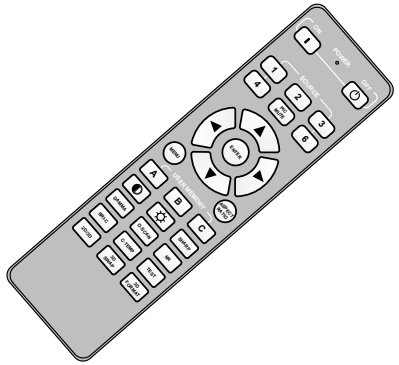
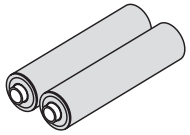
What's In The Box?

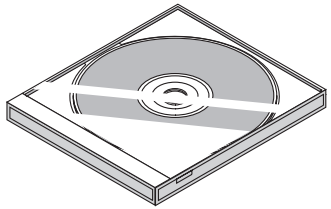


Remote control (112-961)

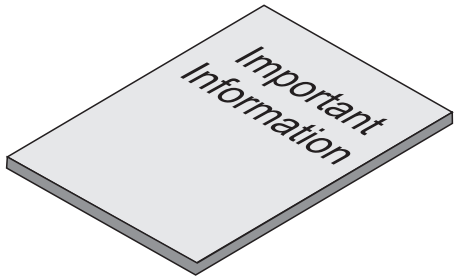


2x AAA batteries

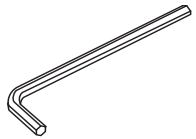
Projector



User Manual on disc (115-759)

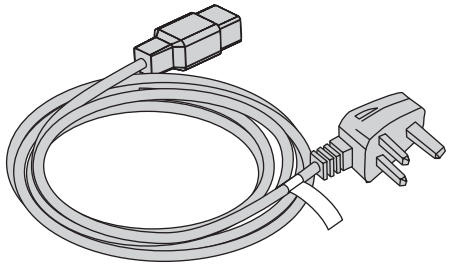


Important Information (110-287)

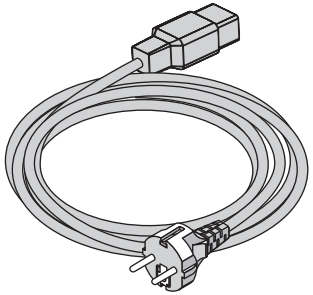


5mm Allen wrench

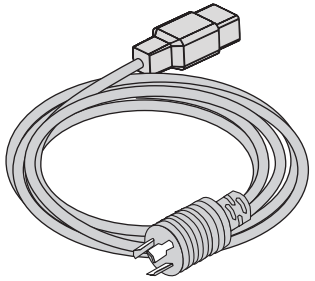
3D sync cable



Power cable, United Kingdom (102-180)



Power cable, Europe (102-163)



Power cable, North America (102-165)

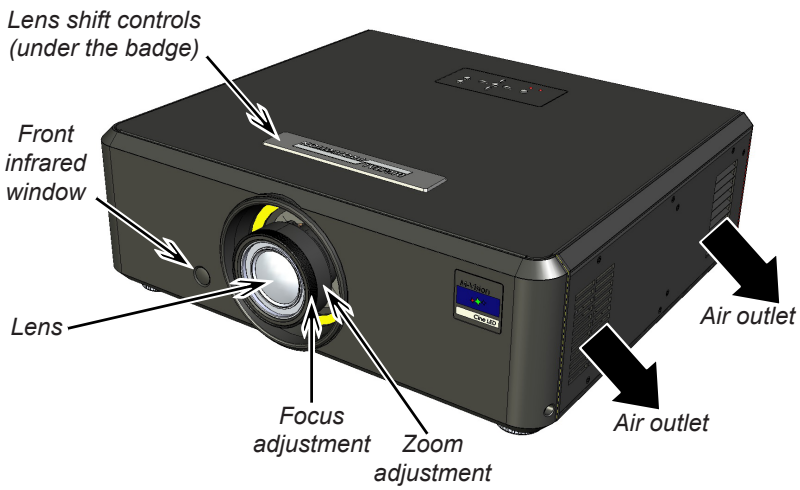
Notes

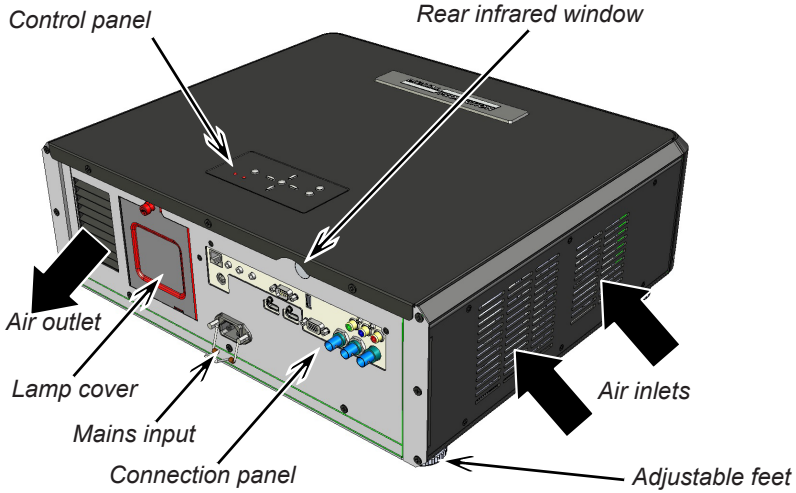
Make sure your box contains everything listed. If any pieces are missing, contact your dealer.

You should save the original box and packing materials, in case you ever need to ship your projector.

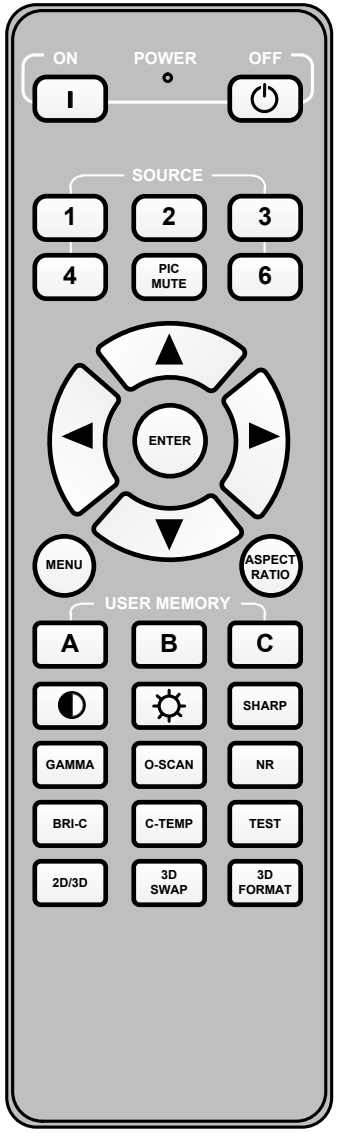
Projector Overview

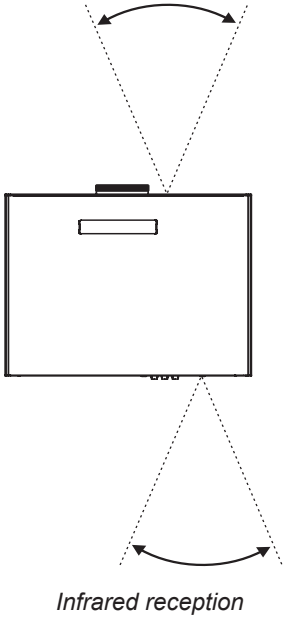
Front and rear views





Remote control





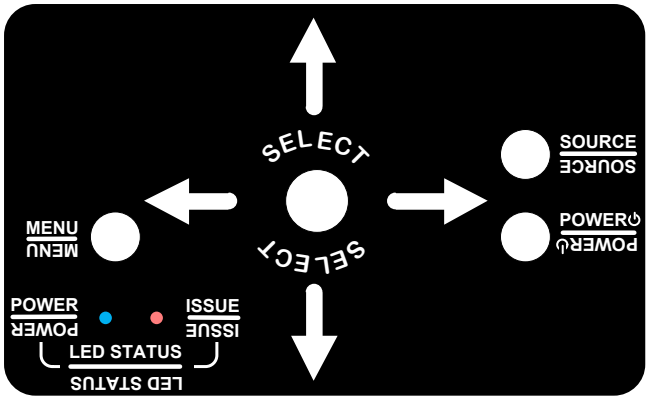
Infrared reception

Notes

- *The projector uses the standard M-Vision series infrared remote control.*
- *Some of the controls are duplicated on the projector control panel, as shown on the next page.*
- *For full details of how to use the controls and the menu system, see the **Operating Guide**.*

Control panel indicators

Some of the functions on the remote control are duplicated on the projector control panel, as shown here.



Power indicator (blue light)

The blue Power indicator will light when the projector is in STANDBY mode, and will flash when the projector is cooling down or warming up, as shown in the chart below. It will be off when the projector is in normal running mode.

Condition	Power indicator behaviour (blue light)
Standby	On
Cooling / Warming up	Flashing
Power on (Normal)	Off

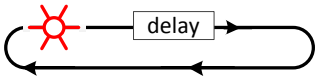
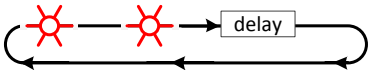
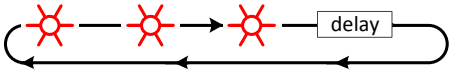
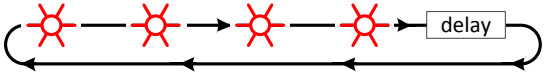
Notes

*For full details of how to use the controls and the menu system, see the **Operating Guide**.*

Error codes (red light)

If the projector detects an error, the red Issue indicator will flash as shown in the chart below.

For example, if the lamp door is left open, the red indicator will flash twice followed by a pause, then the sequence will repeat until the error condition is corrected.

Condition	Issue indicator behaviour (red light)
Lamp fail	Flashes once, then pauses, then repeats. 
Lamp door open	Flashes twice, then pauses, then repeats. 
Fan fail	Flashes three times, then pauses, then repeats. 
Over temperature	Flashes four times, then pauses, then repeats. 
System error	On.

Notes

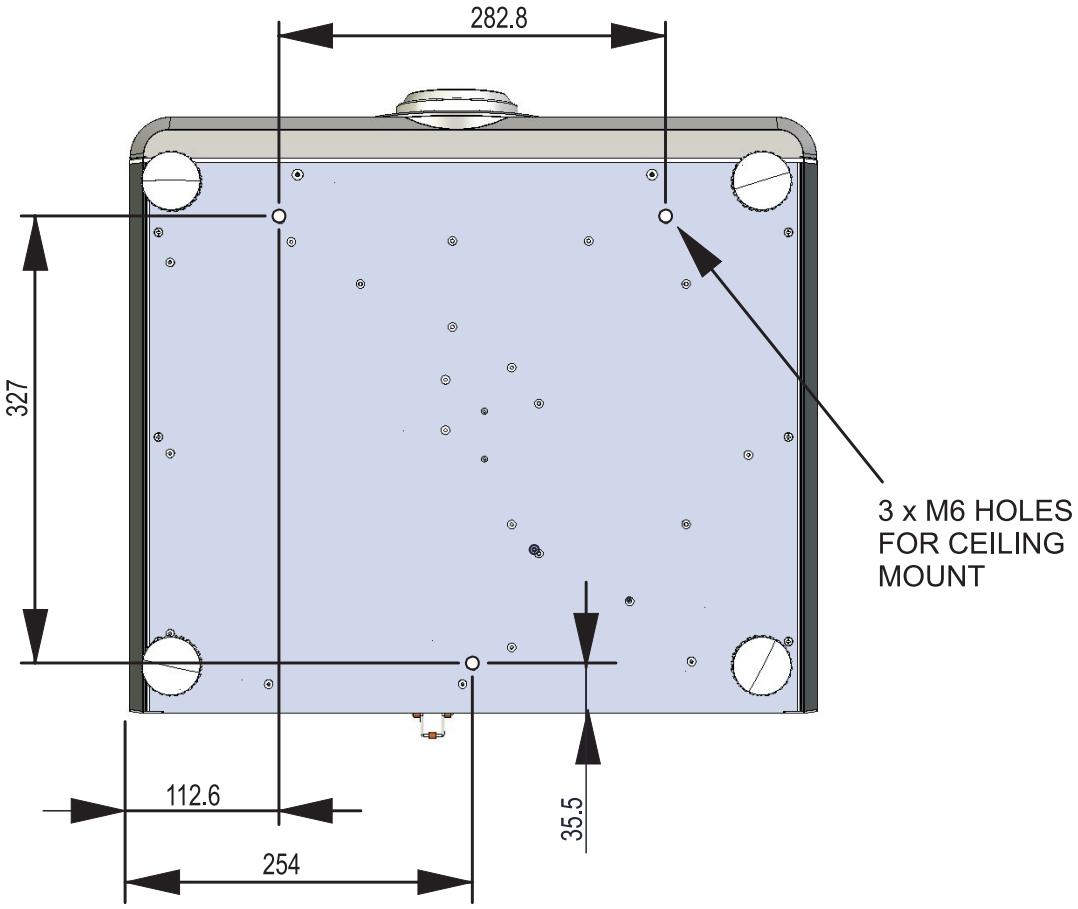
*For full details of how to use the controls and the menu system, see the **Operating Guide**.*

Positioning The Screen And Projector

Consider the following:

- When installing the screen, ensure that it is in the best position for viewing by your audience.
- When positioning the projector, ensure that it is at a suitable distance from the screen for the image to fill the screen.
- Whether you are mounting the projector on the ceiling or standing it on its adjustable feet, ensure that it is level and perpendicular to the screen.

The dimension drawing below shows the positions of the feet for table mounting, and the fixing holes for ceiling mounting.



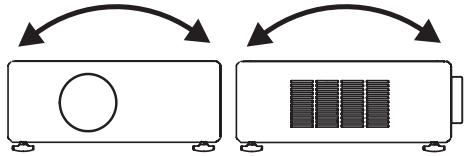
Notes

All dimensions on the diagram on this page are in mm.

Ensure that there is at least 30cm (12in) of space between the ventilation outlets and any wall, and 10cm (4in) on all other sides.

Do not stack more than 3 projectors.

Do not tilt the projector more than ±12° from side to side when in use, as this may cause serious lamp failure, damage the lamp module and cause extra cost on replacement.



The projector may be tilted to one side and positioned in portrait mode as long as the exhaust outlet points upward.

When positioning the projector in portrait mode, ensure adequate airflow to the air inlet.

Operating The Projector

Switching the projector on

1. Connect the power cable between the mains supply and the projector.
2. When the self-test has completed, the power indicator on the projector control panel shows blue to indicate that the projector is in STANDBY mode and the lamp is switched off. Press and hold for three seconds either of the following:
   - The **POWER** button on the control panel
   - The **ON** button [I] on the remote control

The power indicator on the control panel flashes blue for a few seconds whilst the lamp comes up to full brightness. When the projector is fully switched on and ready for use, the power indicator switches off.

Switching the projector off

1. Press **POWER** on the control panel or the **POWER** button [⏻] on the remote control, then press the button again to confirm.

   The lamp will switch off, the power indicator on the control panel will start flashing in blue and the projector will be in STANDBY mode while cooling off.
2. Wait until the power indicator has stopped flashing and the fans have stopped working, then disconnect the power cable.

Notes

*For full details of how to use the controls and the menu system, see the **Operating Guide**.*

Even if the power indicator has stopped flashing, please allow the lamp to cool off for five minutes before:

- **disconnecting the power**
- **moving the projector**
- **changing the lamp**

Adjusting the lens

Zoom

Turn the smooth ring on the lens, closest to the case, to adjust the zoom so that the image fills the screen.

Focus

Turn the knurled ring at the outer end of the lens, to adjust the focus until the image is sharp.

Shift

1. To reveal the adjustment access holes, slide the Digital Projection badge in the direction shown below, then gently lift it off by hand.
2. Use the 5mm Allen wrench to adjust the horizontal and vertical position of the image.

Notes

Do NOT prise off the badge using a tool.

Lens shift controls are not available on projectors fitted with the fixed 0.73:1 lens.

Selecting an input signal or test pattern

Input signal

Connect an image source to the projector. The signal should be automatically detected by the projector, and should be displayed within two or three seconds.

If more than one signal is connected, select the image you want to display in one of the following ways:

- Access the **Main** menu (either from the remote control or from the control panel) and then go to **Input Select**.
- On the remote control, select from the inputs using the number buttons 1 to 6
- On the control panel, press **SOURCE** to cycle through all the inputs.

Test pattern

If you have no image source connected to the projector, you can display a test pattern instead. To display a test pattern, do either of the following:

- Press the **TEST** button TEST on the remote control to cycle through all test patterns.
- Access the **Service** menu and select a test pattern.

Notes

*For full details of how to use the controls and the menu system, see the **Operating Guide**.*

Adjusting the image

Orientation

To change the image orientation, access the **System** menu and then open the **Rear Projection** and **Ceiling Mode** settings.

Aspect ratio

To set up an aspect ratio for your image, do either of the following:

- Press the **ASPECT RATIO** button (ASPECT RATIO) on the remote control to cycle through the available settings.
- Access the **Main** menu and then select the **Aspect Ratio** setting.

Picture

To change brightness and contrast, do either of the following:

- Press **BRIGHTNESS** ☼ or **CONTRAST** ◐ on the remote control, then use the arrow buttons to move the sliders.
- Access the **Image** menu and adjust the **Brightness** and **Contrast** settings.

3D

In the **Main** menu, use the **3D Control** sub-menu.

Notes

*For full details of how to use the controls and the menu system, see the **Operating Guide**.*

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DIGITAL PROJECTION

CONNECTION GUIDE

M-Vision Cine 320 3D series

High Brightness Digital Video Projector
16:9 widescreen display

Rev E July 2014

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Signal Inputs

Component 1 and 2

RGsB only (not RGBS)

In the **Advanced Image** menu, set **Colorspace** to **Auto**, or if necessary to **RGB Video**.

YPbPr/YCbCr

In the **Advanced Image** menu, set **Colorspace** to **Auto**, or if necessary to **REC709** or **REC601**.

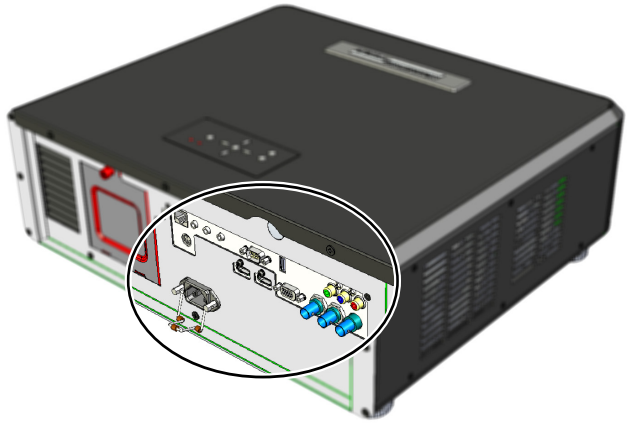
RGB

In the **Advanced Image** menu, set **Colorspace** to **Auto**, or if necessary to **RGB PC**.

HDMI 1 and 2

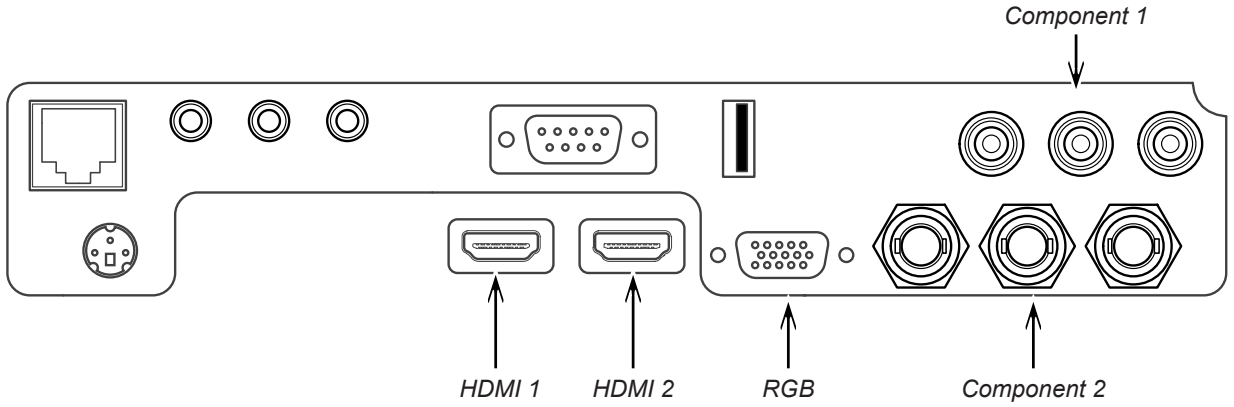
If you are using a **Dual Pipe** 3D signal, connect the left signal to one input and the right signal to the other.

If necessary, the images can be swapped using the **3D Settings** sub-menu of the **Main** menu.



Notes

*For a complete listing of pin configurations for all signal and control connectors, see **Wiring Details** later in this guide.*



Supported Signal Input Modes

Signal	Resolution	Frame Rate (Hz)	3D Support			Component	VGA RGBHV	VGA YUV	HDMI RGB	HDMI YUV 8 bit	HDMI YUV 10 bit	HDMI YUV 12 bit	References
			Frame Packing	Side by Side (Horizontal)	Top and Bottom								
PC	640 x 480	59.94					✓		✓				VESA DMT
	640 x 480	74.99					✓		✓				VESA DMT
	640 x 480	85					✓		✓				VESA DMT
	800 x 600	60.32					✓		✓				VESA DMT
	800 x 600	75					✓		✓				VESA DMT
	800 x 600	85.06					✓		✓				VESA DMT
	848 x 480	47.95					✓		✓				VESA CVT
	848 x 480	59.94					✓		✓				VESA CVT
	1024 x 768	60					✓		✓				VESA DMT
	1024 x 768	75.03					✓		✓				VESA DMT
	1024 x 768	85.03					✓		✓				VESA DMT
	1024 x 768	70.1					✓		✓				VESA DMT
	1280 x 720	47.95					✓		✓				VESA GTF
	1280 x 768	60					✓		✓				VESA DMT
	1280 x 768	60					✓		✓				VESA DMT Reduced Blanking
	1280 x 768	75					✓		✓				VESA DMT
	1280 x 768	85					✓		✓				VESA DMT
	1280 x 800	50					✓		✓				VESA DMT
	1280 x 800	60					✓		✓				VESA DMT
	1280 x 800	75					✓		✓				VESA DMT
	1280 x 1024	60.02					✓		✓				VESA DMT
	1280 x 1024	75.02					✓		✓				VESA DMT
	1280 x 1024	85.02					✓		✓				VESA DMT
	1440 x 900	60					✓		✓				VESA DMT

Signal	Resolution	Frame Rate (Hz)	3D Support			Component	VGA RGBHV	VGA YUV	HDMI RGB	HDMI YUV 8 bit	HDMI YUV 10 bit	HDMI YUV 12 bit	References
			Frame Packing	Side by Side (Horizontal)	Top and Bottom								
PC (cont.)	1440 x 900	75					✓		✓				VESA DMT
	1400 x 1050	60					✓		✓				VESA DMT
	1400 x 1050	75					✓		✓				VESA DMT
	1600 x 1200	60					✓		✓				VESA DMT
	1920 x 1080	47.95					✓		✓				VESA CVT
	1600 x 1200	60					✓		✓				VESA DMT
	1920 x 1200	60					✓		✓				VESA DMT Reduced Blanking
	1680 x 1050	59.94					✓		✓				VESA CVT
Apple Mac	640 x 480	66.59					✓		✓				VESA DMT
	832 x 624	74.54					✓		✓				VESA DMT
	480i	59.94				✓			✓				SMPTE 125M, CEA-861-D
	576i	50				✓			✓				ITU-R BT.601, CEA-861-D
EDTV	480p	59.94				✓	✓	✓	✓	✓	✓	✓	SMPTE 293M, CEA-861-D
	576p	50				✓	✓	✓	✓	✓	✓	✓	ITU-R BT.1358, CEA-861-D

Signal	Resolution	Frame Rate (Hz)	3D Support			Component	VGA RGBHV	VGA YUV	HDMI RGB	HDMI YUV 8 bit	HDMI YUV 10 bit	HDMI YUV 12 bit	References
			Frame Packing	Side by Side (Horizontal)	Top and Bottom								
HDTV	720p	23.98	✓										
	720p	24	✓										
	720p	29.97	✓										
	720p	30	✓										
	720p	50	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	SMPTE 296M, CEA-861-D
	720p	59.94	✓	✓	✓								
	720p	60	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	SMPTE 296M, CEA-861-D
	1080i	50		✓		✓	✓	✓	✓	✓	✓	✓	SMPTE 274M, CEA-861-D
	1080i (Aus)	50		✓		✓	✓	✓	✓	✓	✓	✓	SMPTE 295M
	1080i	59.94		✓		✓	✓	✓	✓	✓	✓	✓	SMPTE 274M, CEA-861-D
	1080i	60		✓		✓	✓	✓	✓	✓	✓	✓	SMPTE 274M, CEA-861-D
	1080p	23.98	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	SMPTE 274M, CEA-861-D
	1080p	24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	SMPTE 274M, CEA-861-D
	1080p	25				✓	✓	✓	✓	✓	✓	✓	SMPTE 274M, CEA-861-D
	1080p	29.97	✓		✓	✓	✓	✓	✓	✓	✓	✓	SMPTE 274M, CEA-861-D
	1080p	30	✓		✓	✓	✓	✓	✓	✓	✓	✓	SMPTE 274M, CEA-861-D
	1080p	50			✓	✓	✓	✓	✓	✓	✓	✓	SMPTE 274M, CEA-861-D
	1080p	59.94			✓	✓	✓	✓	✓	✓	✓	✓	SMPTE 274M, CEA-861-D
	1080p	60			✓	✓	✓	✓	✓	✓	✓	✓	SMPTE 274M, CEA-861-D

Control Connections

Service port

The service port is used to download firmware updates issued from time to time by Digital Projection.

LAN and RS232

All of the projector's features can be controlled via a LAN or serial connection using the text strings described in the ***Remote Communications Guide***.

Connecting to the projector via a web-based interface is described in the next chapter, ***LAN IP configuration utility***.

Wired remote control

You can connect a wired remote control to the projector via a 3.5mm jack. You can also use this socket to connect an external IR repeater if needed.

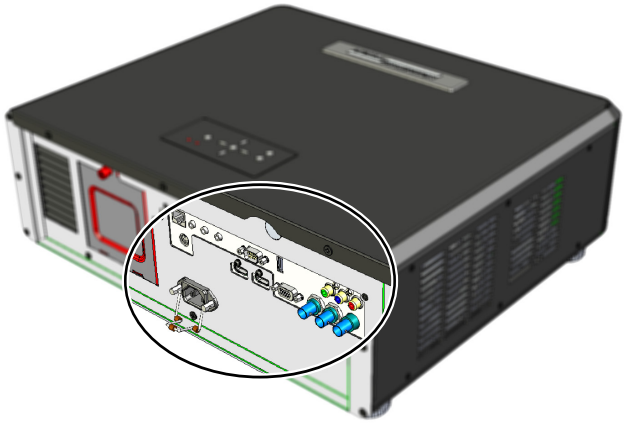
Trigger 1 and 2 outputs

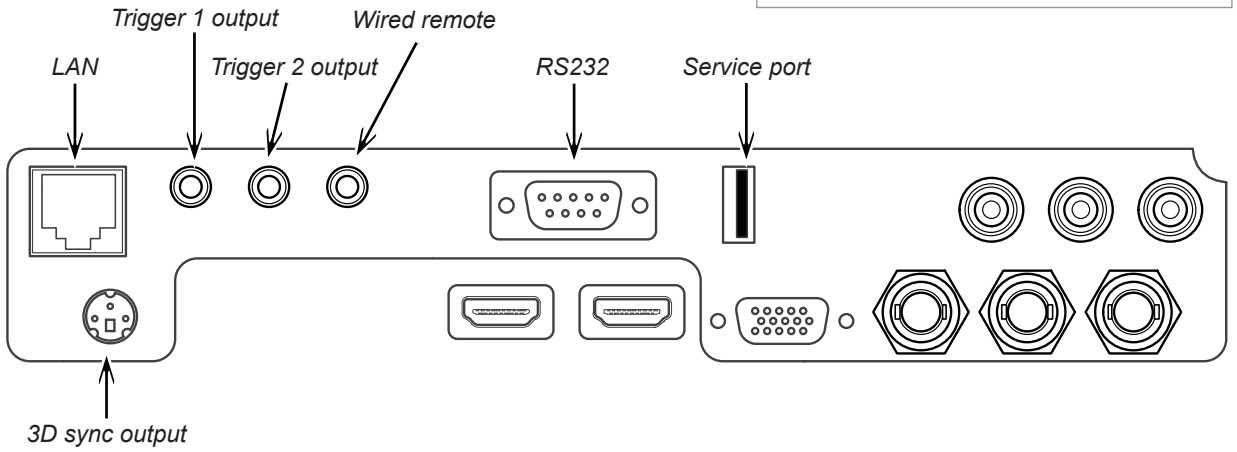
The Trigger outputs are activated by one of the three following conditions, as set in the **Control** menu:

- Screen trigger: can be connected to an electrically operated screen, automatically deploying the screen when the projector starts up, and retracting the screen when the projector shuts down.
- Aspect ratio trigger: can be used to control screen shuttering for different aspect ratios.
- RS232 trigger: can be used to control the screen or screen shuttering on receipt of an RS232 command.

3D Sync output

Connect the Sync Out connector to a Z Screen or 3D IR emitter as appropriate.





Notes

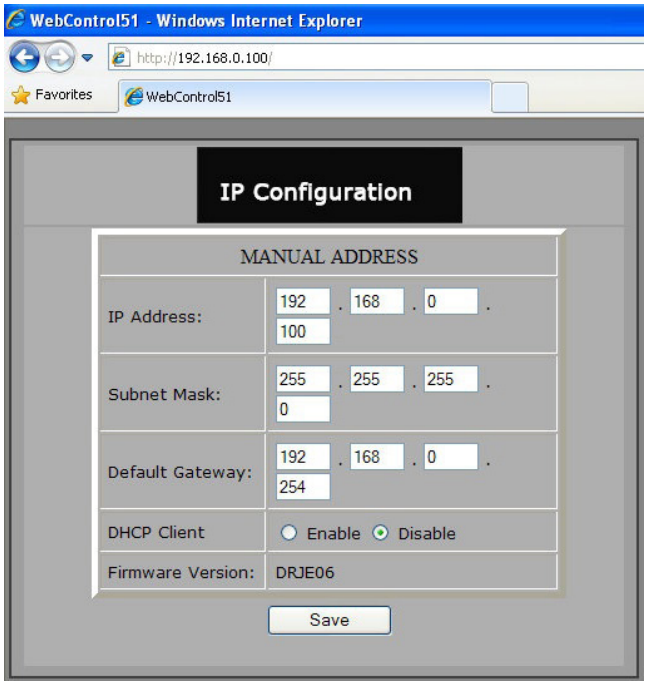
*For a complete listing of pin configurations for all signal and control connectors, see **Wiring Details** later in this guide.*

Plugging in the wired remote control disables the infrared.

LAN IP Configuration Utility

LAN IP configuration can be carried out using a web browser:

1. Point your browser at the projector by typing the LAN IP address into the address bar, then press the **ENTER** key.
   The embedded IP Configuration webpage should appear.
2. Enter the settings as required, then click **Save**.



The IP Configuration page

Notes

Wiring Details

Signal inputs

Component 1

3 x RCA Phono connector

Component 1

Component 2

3 x 75 ohm BNC

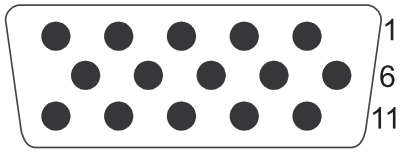
RGsB	YCbCr	YPbPr
R	Cr	Pr
G + Sync	G	Y
B	Cb	Pb

Component 2

RGB input

15 way D-type connector

1	R
2	G
3	B
4	unused
5	Digital Ground (H Sync)
6	R Ground
7	B Ground
8	G Ground
9	+5v
10	Digital Ground (V Sync/DDC)
11	unused
12	SDA
13	H Sync
14	V Sync
15	SCL



Pin view of female connector

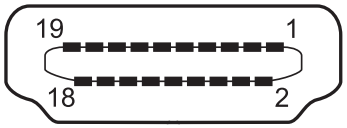
Notes

*For full details of all input settings, see the **Main menu** section in the **Operating Guide**.*

HDMI inputs

19 way type A connector

1	TMDS Data 2+
2	TMDS Data 2 Shield
3	TMDS Data 2-
4	TMDS Data 1+
5	TMDS Data 1 Shield
6	TMDS Data 1-
7	TMDS Data 0+
8	TMDS Data 0 Shield
9	TMDS Data 0-
10	TMDS Clock+
11	TMDS Clock Shield
12	TMDS Clock-
13	CEC
14	not connected
15	SCL (DDC Clock)
16	SCA (DDC Data)
17	DDC/CEC Ground
18	+5 V Power
19	Hot Plug Detect



Pin view of panel connector

Notes

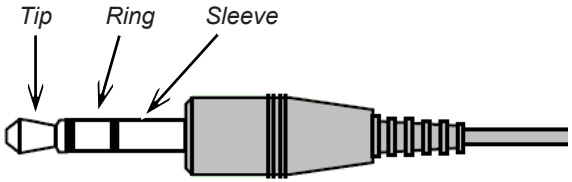
*For full details of all input settings, see the **Main menu** section in the **Operating Guide**.*

Control connections

Wired remote control connection

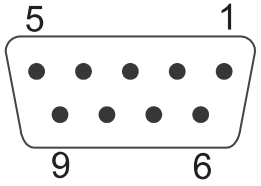
3.5mm mini jack

Tip	Power
Ring	Signal
Sleeve	Ground



Serial control input

1	unused
2	Received Data (RX)
3	Transmitted Data (TX)
4	unused
5	Signal Ground
6	unused
7	unused
8	unused
9	unused



Pin view of female connector

Straight-through cable

(used to connect the projector to a computer)

RX	2	---	2	TX
TX	3	---	3	RX
GND	5	---	5	GND

Serial port settings

Baud rate	9,600 bps
Data length	8 bits
Stop bits	one
Parity	none
Flow control	none

Notes

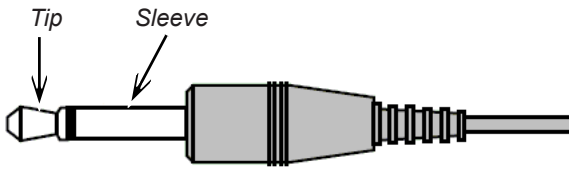
Plugging in the remote control cable disables the infrared.

Only one remote connection should be used at any one time.

Trigger 1 & 2 outputs

3.5 mm mini jack

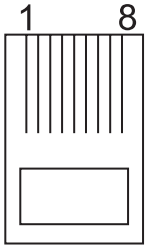
Tip	Signal
Sleeve	Ground



LAN connection

TCP Port number: 7000

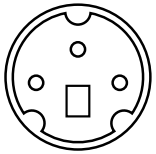
10BaseT Unshielded Twisted Pair cable



Top view of cable connector (pin is underneath)

3D sync connection

Pin 1	+5V
Pin 2	Ground
Pin 3	Stereo sync



VESA 3-pin Mini DIN

Notes

DIGITAL PROJECTION

OPERATING GUIDE

M-Vision Cine 320 3D series

High Brightness Digital Video Projector
16:9 widescreen display

Rev E July 2014

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Using The Menus

Opening the OSD

Access the various menus using either the projector control panel or the remote control. On either device,

- press the **MENU** button.

The on-screen display (OSD) opens showing the list of available menus.

Opening a menu

Move up and down the list using the **UP**▲ and **DOWN** ▼ arrow buttons. To open a menu,

- press **ENTER** (on the remote control) or **SELECT** (on the control panel).

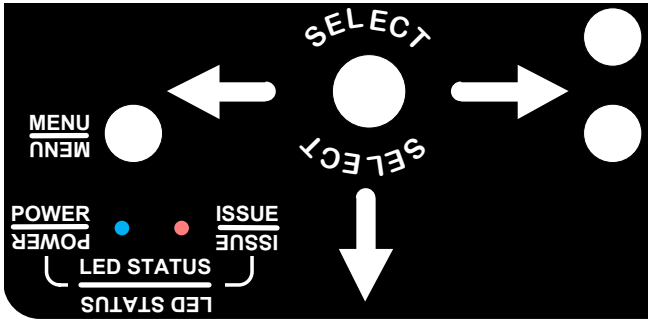
This guide refers to the above two buttons as **ENTER**/**SELECT**.

Exiting menus and closing the OSD

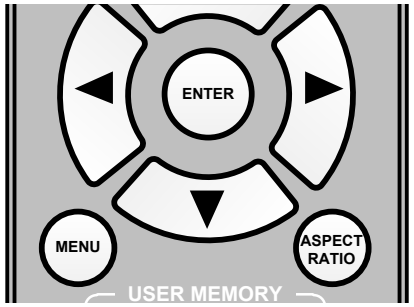
To go back to the previous page,

- press **MENU**.

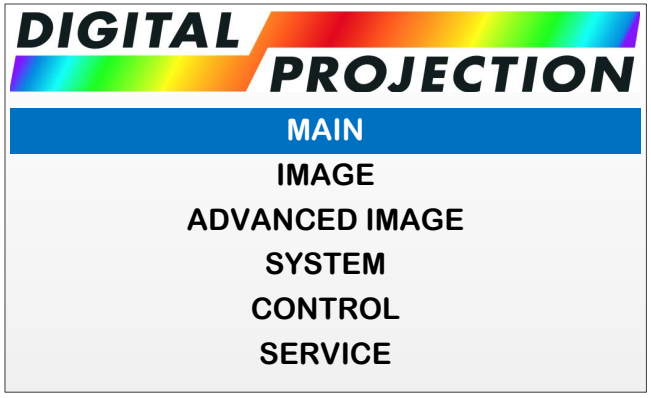
When you reach the top level, pressing **MENU** will close the OSD.



Projector control panel



Remote control



On-screen display: top level (list of available menus)

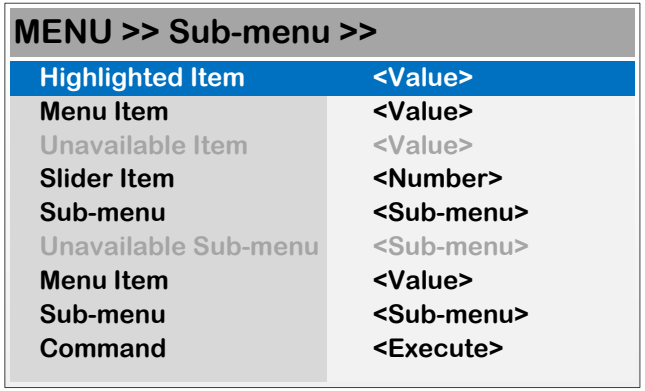
Notes

Initially the OSD opens with the top item highlighted. Every time it is opened thereafter, it will show the last highlighted item. When the projector is restarted, the OSD opens with the top item highlighted again.

Inside a menu

When you open a menu, the page consists of the following elements:

- Title bar at the top
  Shows which menu (and sub-menu) you have accessed.
- Highlighted item
- Available and unavailable items
  Unavailable items appear grayed out. Whether an item is available may depend on other settings.
- Text next to each item
  Shows whether the item:
  - has a value that can be changed (shows the current value)
  - opens a sub-menu (says <Sub-menu>)
  - executes a command (says <Execute>)



Inside a menu

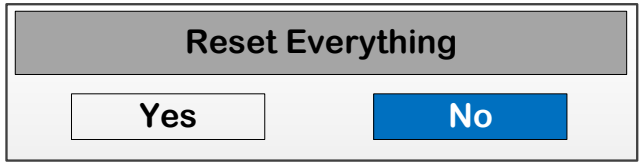
Accessing sub-menus

Use the **UP** ▲ and **DOWN** ▼ arrow buttons to highlight the sub-menu, then press **ENTER/SELECT**.

Executing commands

If the item contains a command, press **ENTER/SELECT** to execute it.

You may be asked for confirmation. Use the **LEFT** ◀ and **RIGHT** ▶ arrow buttons to select your answer and then press **ENTER/SELECT**.



Confirmation dialog

Notes

The highlighted item has a blue background.

Editing projector settings

If the highlighted menu item is a setting with a list of values to choose from, you can change the value in two different ways.

Choosing a value from a list

To access the list of values and then make a selection:

1. Highlight the menu item and press **ENTER**/**SELECT**.
2. On the new page that opens, use the **UP** ▲ and **DOWN** ▼ arrow buttons to highlight a value, then press **ENTER**/**SELECT** again. A green "check" symbol ✔ marks the current selection.
3. Press **MENU** to exit the list.

Changing the value without viewing the list

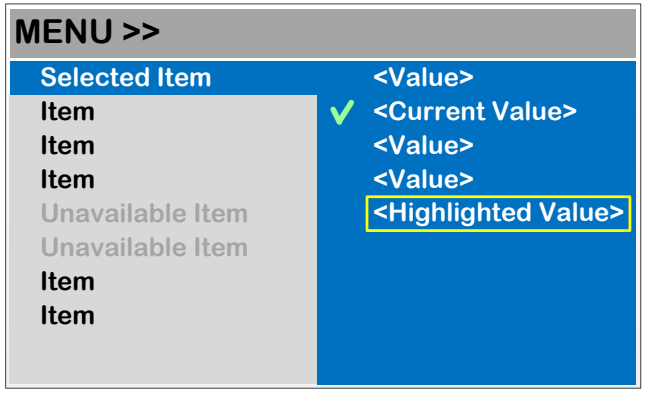
To switch to the next or previous value without viewing the list,

- press the **LEFT** ◀ or **RIGHT** ▶ arrow button.

Using a slider to set a value

Some parameters with a numeric value open a slider. To set such a parameter:

1. Press the **LEFT** ◀ or **RIGHT** ▶ arrow button, or **ENTER**/**SELECT**. The arrow buttons will open the slider and adjust the value at the same time. **ENTER**/**SELECT** will open the slider without altering the initial value.
2. Use the **LEFT** ◀ and **RIGHT** ▶ arrow buttons to move the slider.
3. When ready, press **MENU** to exit the slider.



List of values

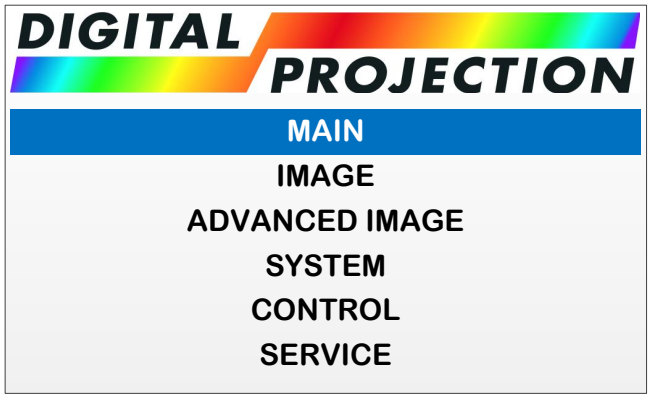
Slider

Notes

Some menu items may be unavailable due to settings in other menus. Unavailable menu items appear gray.

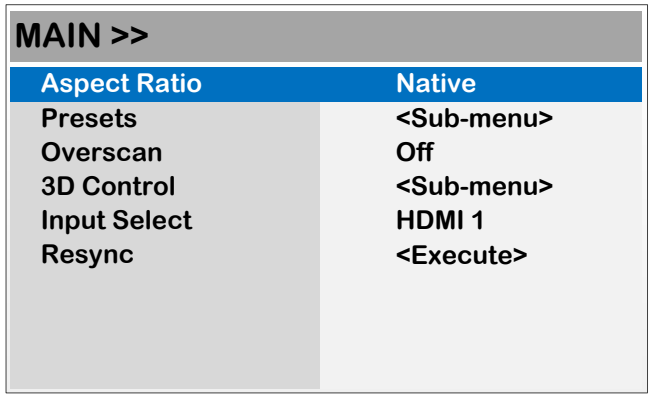
A Tour Of The Menus

The projector settings are grouped into six menus as shown in the illustration.



Main menu

Selecting **Main** from the top level opens the **Main** menu.



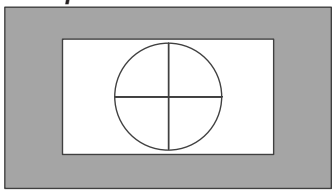
Notes

Main menu continued from previous page

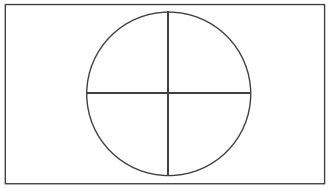
Aspect Ratio

This setting allows you to switch between **16:9**, **TheaterScope**, **4:3**, **4:3 Narrow** and **Native**.

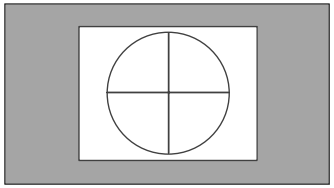
Examples



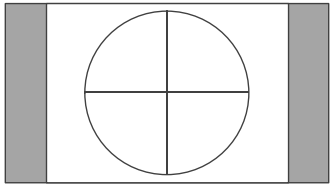
*16:9 image using the **Native** setting*



*16:9 image using the **16:9** setting*

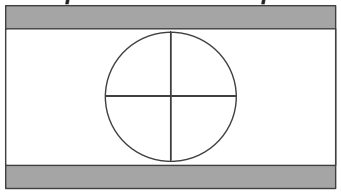


*4:3 image using the **Native** setting*

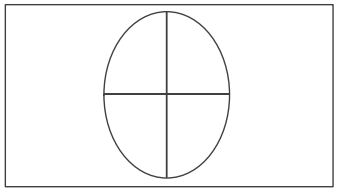


*4:3 image using the **4:3** setting*

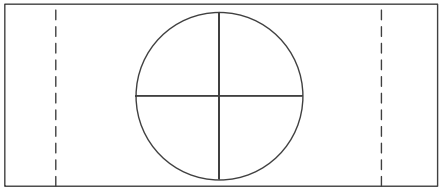
Examples with anamorphic lens



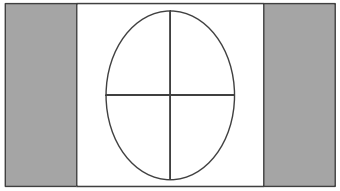
*2.35:1 image using **16:9** without anamorphic lens*



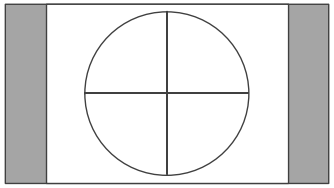
*2.35:1 image using **TheaterScope** without anamorphic lens*



*2.35:1 image using **TheaterScope** with anamorphic lens*



***4:3 Narrow** without anamorphic lens*



***4:3 Narrow** with anamorphic lens*

Notes

Main menu continued from previous page

Presets

The current image settings can be saved a preset, which you can recall later. The default settings can be recalled at any time as well.

Up to four custom presets can be stored for each input source you use.

The following settings are saved in a preset:

- From the **Main** menu — **Aspect Ratio** and **Overscan**
- From the **Image** menu — **Brightness**, **Contrast**, **Saturation**, **Hue**, **Sharpness** and **Noise Reduction**
- From the **Advanced Image** menu — **Colorspace**, **Gamma**, **Color Temperature**, **Color Gamut**, **RGB Adjust**, **RGB Gains**, **Brilliant Color** and **Adaptive Contrast**

To save a preset:

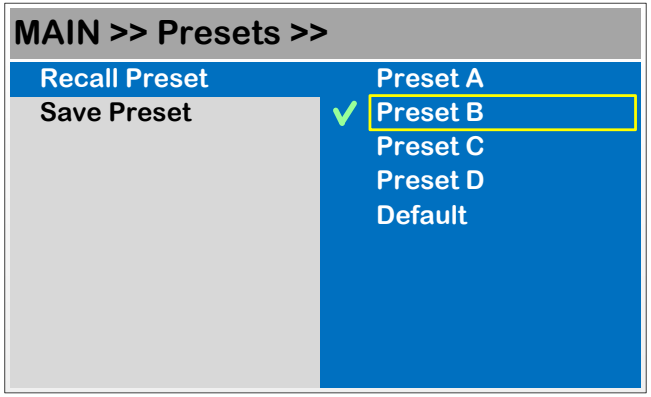
1. From the **Main** menu, open **Presets**.
2. Highlight **Save Preset** on the left and then move to the list on the right. Select the preset you wish to save and press **ENTER**/**SELECT**.

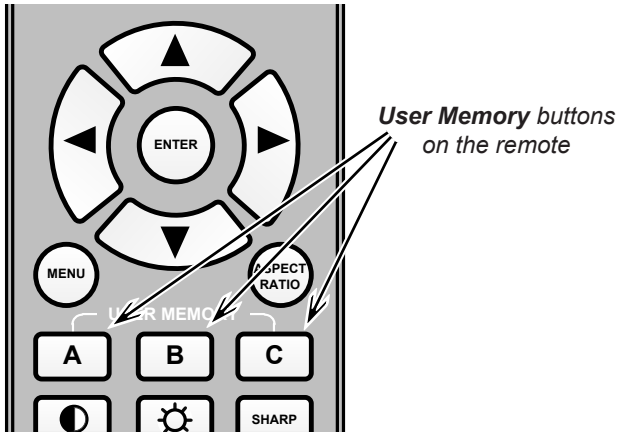
To recall a saved preset:

1. From the **Main** menu, open **Presets**.
2. Highlight **Recall Preset** on the left and move to the list on the right. Select the preset you wish to recall, then press **ENTER**/**SELECT**.

Press **MENU** to leave the **Presets** page.

Alternatively, you can recall presets A, B and C with the **USER MEMORY** buttons on your remote control.





***User Memory** buttons on the remote*

Notes

Settings are saved ONLY for the current input source.

*Preset D is only accessible through the **Presets** page of the menu, and not through the remote.*

Main menu continued from previous page

Overscan

This setting, if switched on, removes unwanted artefacts from the edges of your image by cropping the edges or increasing the size of the image to force the edges off-screen.

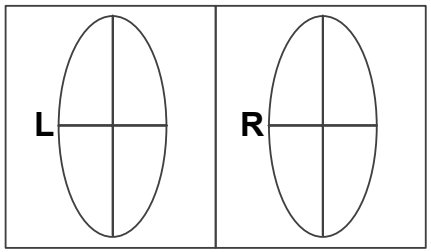
Unwanted artefacts along the image edges usually occur when the projector is connected to a low quality input souce.

Choose from **Off**, **Crop** or **Zoom**.

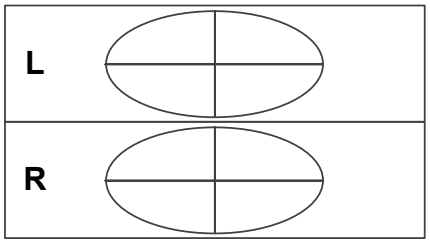
3D Control

Use this sub-menu to enable, disable and set up 3D input, as follows:

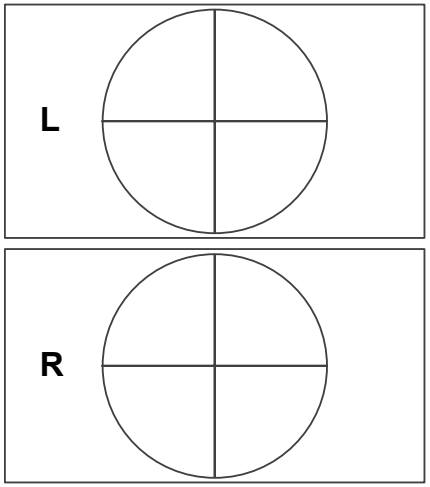
- **Enable 3D** — **On** and **Off**
- **3D Format** — **Auto** (recommended), **Side by Side**, **Top and Bottom**, **Dual Pipe**
- **DLP Link** — **On** (if you are using 3D glasses that can utilise the DLP Link® signal embedded in the image) and **Off**
- **3D Swap** — **Normal** and **Reverse** (set to **Reverse** if the 3D images are displayed in the wrong order)
- **Dark Time** — **1ms**, **1.5ms**, **2ms** and **2.5ms**. Set to reduce the effect of images overlapping whilst the glasses are switching
- **Sync Delay** — use the **LEFT** ◀ and **RIGHT** ▶ arrow buttons to set the value in milliseconds, to compensate for signal processsing delays in the projector.
- **1080p24 3D Display** — if you set this to **144Hz**, 30 lines are cropped from the top and bottom of the frame; **96 Hz** displays the full frame.



Side by Side



Top and Bottom



HDMI 1

HDMI 2

Dual Pipe

Notes

*For a list of supported 3D formats, see the **Connection Guide**.*

3D video is only possible on the HDMI inputs.

*Most of the **3D Control** settings, including **Enable 3D**, will be unavailable if **3D Format** is set to **Auto** and the projector is not receiving a 3D image from the source. To activate the **Enable 3D** setting, change **3D Format** to something other than **Auto**.*

*If **Enable 3D** is available but set to **Off** and you decide to change the value of the **3D Forma**t setting, your action will switch **Enable 3D** on.*

*The **Frame Packing** format is automatically detected by the projector.*

Main menu continued from previous page

Input Select

This setting controls the input source used by the projector. Choose from the following input sources:

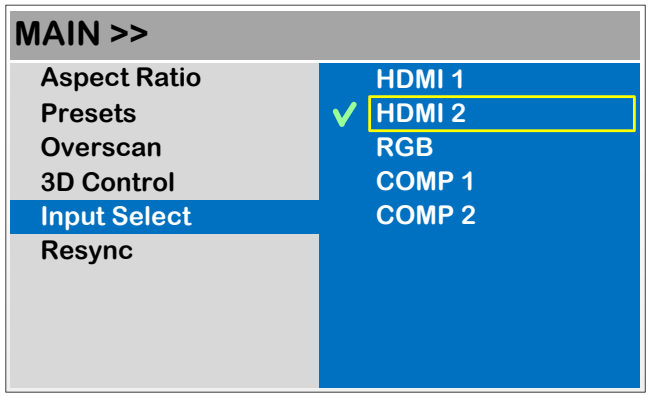
- **HDMI 1**
- **HDMI 2**
- **RGB**
- **COMP 1**
- **COMP 2**

To change the input source, highlight **Input Select**, and then:

- Either toggle between the available sources using the **LEFT** ◀ and **RIGHT** ▶ arrow buttons
- Or press **ENTER**/**SELECT** and then select a source from the list.

Resync

Press **ENTER**/**SELECT** to force the projector to resynchronize with the current input signal.



Notes

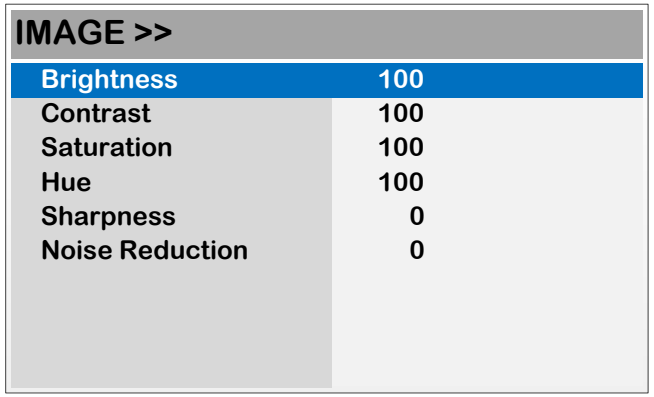
*See the **Connection Guide** for further information about the available inputs and connections.*

Image menu

Highlight the setting you wish to edit, and then press **ENTER/SELECT**, or the **LEFT** ◀ or **RIGHT** ▶ arrow button to open the slider.

Use the **LEFT** ◀ and **RIGHT** ▶ arrow buttons to adjust the slider.

Press **MENU** to close the slider.



Notes

Advanced Image menu

Colorspace

In most cases, the **Auto** setting determines the correct colorspace to use. If it does not, you can choose a specific colorspace:

- **REC709** sets the colorspace to that defined in ITU-R BT.709.
- **REC601** sets the colorspace to that defined in ITU-R BT.601.
- **RGB-PC** uses RGB colorspace and sets black at 0 and white at 255. Known as Full Range.
- **RGB-Video** uses RGB colorspace and sets black at 16 and white at 235. Known as Limited Range.

Gamma

Choose a de-gamma curve from **Film (2.2)**, **Video**, **Punch (2.0)**, **Graphics** and **CRT (2.5)**.

Used correctly, the **Gamma** setting can improve contrast while maintaining good details for blacks and whites.

If excess ambient light washes out the image and it is difficult to see details in dark areas, lower the **Gamma** setting to compensate. This improves contrast while maintaining good details for blacks. Conversely, if the image is washed out and unnatural, with excessive detail in black areas, increase the setting.

Color Temperature

Choose a value from **5500** (warmer) to **9300** (cooler) or **Native** (no correction).

Highlight the setting you wish to edit, and then either press **ENTER/SELECT** to access it, or use the **LEFT** ◀ and **RIGHT** ▶ arrow buttons to switch between values.

Press **MENU** to go back.

ADVANCED IMAGE >>	
Colorspace	Auto
Gamma	Film (2.2)
Color Temperature	Native
Color Gamut	SMPTE-C
Brilliant Color	On
Adaptive Contrast	Off
RGB Adjust	<Sub-menu>
Fine Sync	<Sub-menu>
Color Mode	Mode 2

Notes

***Video** is similar to **Film (2.2)** but improves dark areas of the image — especially suitable for images from video cameras.*

***Graphics** should only be used for computer presentations that require increased brightness at the cost of grayscale accuracy.*

Advanced Image menu continued from previous page

Color Gamut

In most cases, the **Auto** setting will determine the correct color gamut to use. If it does not, you can select the appropriate setting manually.

Each setting defines the precise hue of each primary (red, green and blue) and secondary (yellow, cyan and magenta) color component used to generate the image.

Use the **LEFT** ◀ and **RIGHT** ▶ arrow buttons to select from:

- **Auto**
- **SMPTE-C** for NTSC, 480i and 480p sources
- **EBU** for PAL, SECAM, 576i and 576p sources
- **REC709** for most other sources
- **Native** — no correction

Brilliant Color®

Allows for increased projector brightness at the expense of accurate color reproduction.

Adaptive Contrast

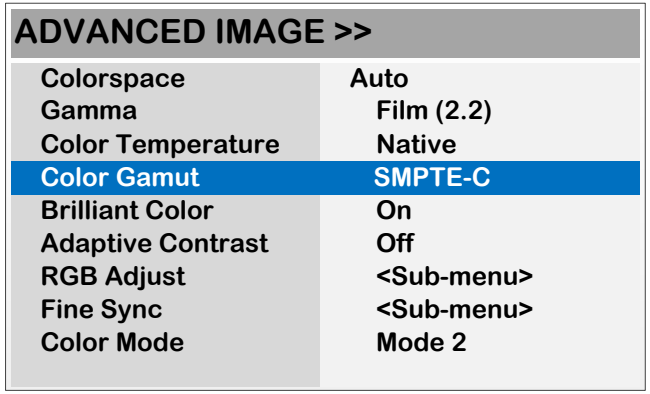
Expands the light and dark portions of the contrast curve of the image, depending on the mean luminance of the image.

RGB Adjust

Adjust the RGB offset and gain settings to improve the color balance of the projected image.

Highlight the setting you wish to edit, and then either press **ENTER/SELECT** to access it, or use the **LEFT** ◀ and **RIGHT** ▶ arrow buttons to switch between values.

Press **MENU** to go back.



Notes

Advanced Image menu continued from previous page

Fine Sync

- **V Position** and **H Position**
  Set the sliders as required.
- **Phase**
  Adjusts the phase of the pixel sampling clock relative to the incoming signal. Adjust the phase if noise is visible.
- **Tracking**
  Adjusts the frequency of the pixel sampling clock. Flicker or vertical banding indicate poor tracking.
- **Sync Level**
  Adjusts the voltage level of the signal detection circuitry. Adjust if the projector loses sync during scenes where the signal drops below black.

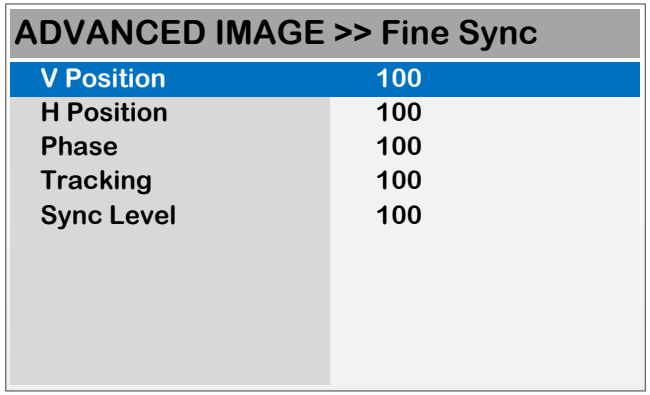
Highlight the Fine Sync setting, and then either press **ENTER/SELECT** to access it, or use the **LEFT** ◀ and **RIGHT** ▶ arrow buttons to switch between values.

Press **MENU** to go back.

Color Mode

This setting adjusts the lamp driver waveform and color wheel programming according to the image requirements of the user. Use the **LEFT** ◀ and **RIGHT** ▶ arrow buttons to select from:

- **Mode 1**
- **Mode 2**



Notes

*Some of the settings within the **Fine Sync** sub-menu, **Phase**, **Tracking** and **Sync Level**, affect only RGB and Component input sources. These settings are not available if the projector is using a different source.*

*Adjust the **Phase** after adjusting **Tracking**.*

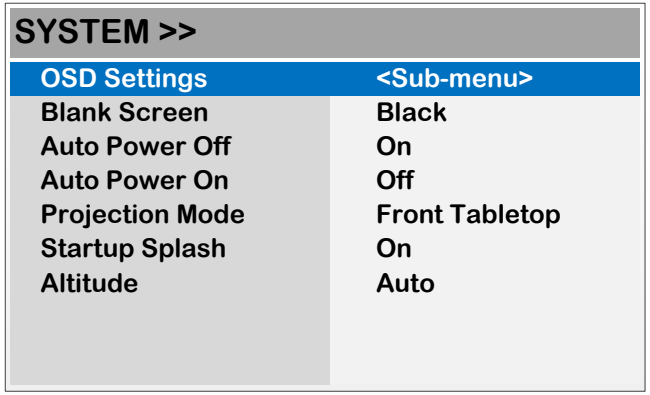
System menu

This menu contains the following settings:

- **OSD Settings**
  Controls the positioning and behavior of the OSD.
- **Blank Screen**
  Defines what appears on the screen while the projector is running with no input signal.
- **Auto Power Off**
  Set this to **On** if you want the projector to go into STANDBY mode when no input source is detected for 20 minutes.
- **Auto Power On**
  If this is **On**, the projector will start up as soon as the mains is connected. If **Off**, the projector will go into STANDBY mode.
- **Projection Mode**
  Tabletop is for a unit standing on its feet; set to **Ceiling** if the projector is mounted upside down. **Front** and **Rear** define whether the projector is in front of the screen or behind it.
- **Startup Splash**
  Show or hide the Digital Projection logo at startup.
- **Altitude**
  High increases the fan speed to compensate for reduced air density at high altitude.

Highlight the setting you wish to edit, and then either press **ENTER/SELECT** to access it, or use the **LEFT** ◀ and **RIGHT** ▶ arrow buttons to switch between values.

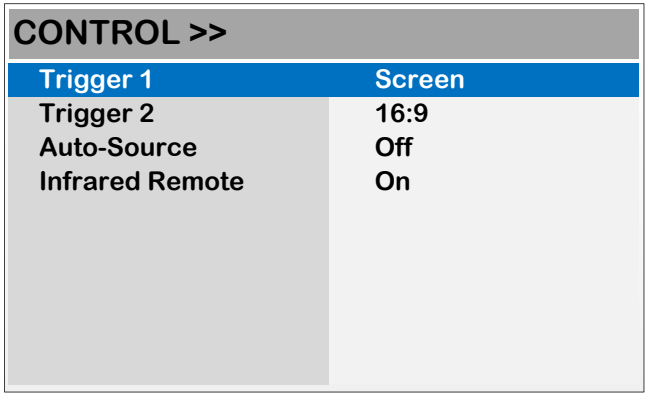
Press **MENU** to go back.



Notes

Control menu

- **Triggers**
  Choose from **Screen**, **16:9**, **TheaterScope**, **4:3**, **4:3 Narrow** or **RS232** to determine what will cause each trigger output to activate.
- **Auto-Source**
  If this setting is **On**, the projector will automatically search for an input source in case its current input is disconnected.
- **Infrared Remote**
  Switch the remote control on and off.

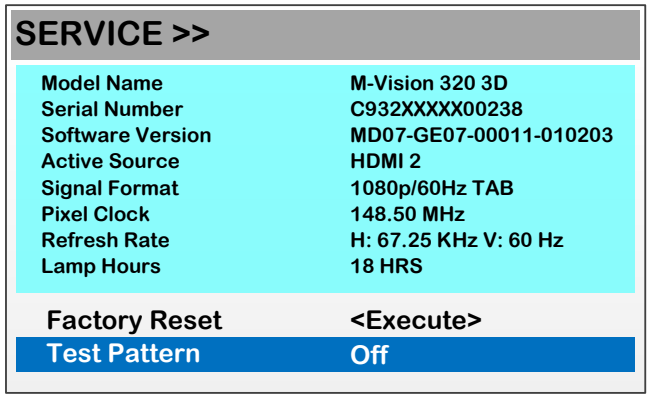


Service menu

Factory Reset

To restore the factory default settings:

1. Navigate to **Factory Reset** and press **ENTER/SELECT**.
2. When prompted, use the **LEFT** ◀ and **RIGHT** ▶ arrow buttons to highlight the **Yes** button and then press **ENTER/SELECT** to confirm your choice.



Test patterns

Highlight this setting and then use the **LEFT** ◀ and **RIGHT** ▶ arrow buttons to switch between the various patterns.

Notes

If you turn the remote control off, you can only turn it back on again from the control panel.

Test patterns are not available in 3D mode.

Menu Map

Menu	*Sub-menus and settings*
MAIN	
	Aspect Ratio *16:9, TheaterScope, 4:3, 4:3 Narrow, Native*
	Presets
	Recall *A, B, C, D, Default*
	Save *A, B, C, D*
	Overscan *Off, Crop, Zoom*
	3D Control
	3D Enable *Off, On*
	3D Format *Auto, Side by Side, Top and Bottom, Dual Pipe*
	DLP Link *Off, On*
	3D Swap *Normal, Reverse*
	Dark Time *1ms, 1.5ms, 2ms, 2.5ms*
	Sync Delay *value between -3.0ms and 3.0ms (0.0ms)*
	1080p24 3D Display *96 Hz, 144 Hz*
	Input Select *HDMI 1, HDMI 2, RGB, COMP 1, COMP 2*
	Resync
IMAGE	
	Brightness *value between 0 and 200 (100)*
	Contrast *value between 0 and 200 (100)*
	Saturation *value between 0 and 200 (100)*
	Hue *value between 0 and 200 (100)*
	Sharpness *value between 0 and 200 (0)*

Notes

The underlined text represents the factory default value for each setting.

The default value of a slider is given in brackets next to the setting.

Menu	*Sub-menus and settings*
ADVANCED IMAGE	
	Colorspace *Auto, REC709, REC601, RGB PC, RGB Video*
	Gamma *Film (2.2), Video, Punch (2.0), Graphics, CRT (2.5)*
	Color Temperature *5500, 6500, 7500, 9300, Native*
	Color Gamut *Auto, REC709, SMPTE-C, EBU, Native*
	BrilliantColor *Off, On*
	Adaptive Contrast *Off, On*
	RGB Adjust
	Red Offset *value between 0 and 200 (100)*
	Green Offset *value between 0 and 200 (100)*
	Blue Offset *value between 0 and 200 (100)*
	Red Gain *value between 0 and 200 (100)*
	Green Gain *value between 0 and 200 (100)*
	Blue Gain *value between 0 and 200 (100)*
	Fine Sync
	V Position *value between 0 and 200 (100)*
	H Position *value between 0 and 200 (100)*
	Phase *value between 0 and 200 (100)*
	Tracking *value between 0 and 200 (100)*
	Sync Level *value between 0 and 200 (100)*
	Color Mode *Mode 1, Mode 2*

Notes

The underlined text represents the factory default value for each setting.

Menu	*Sub-menus and settings*
SYSTEM	
	OSD Settings
	Menu Position *Left-Upper, Right-Upper, Left-Bottom, Right-Bottom, <u>Center</u>*
	Menu Transaprency *<u>0%</u>, 25%, 50%, 75%*
	Time Out *10 sec, <u>30 sec</u>, 60 sec, Always On*
	Message Box *Off, <u>On</u>*
	Blank Screen *Splash, <u>Black</u>, Blue, White*
	Auto Power Off *Off, <u>On</u>*
	Auto Power On *<u>Off</u>, On*
	Projection Mode *<u>Front Tabletop</u>, Front Ceiling, Rear Tabletop, Rear Ceiling*
	Starting Splash *Off, <u>On</u>*
	Altitude *High, <u>Auto</u>*
CONTROL	
	Trigger 1 *<u>Screen</u>, 16:9, TheaterScope, 4:3, 4:3 Narrow, RS232*
	Trigger 2 *Screen, <u>16:9</u>, TheaterScope, 4:3, 4:3 Narrow, RS232*
	Auto-Source *<u>Off</u>, On*
	Infrared Remote *Off, <u>On</u>*
SERVICE	
	Information *Model Name, Serial Number, Software Version, Active Source, Signal Format, Pixel Clock, Refresh Rate, Lamp Hours*
	Factory Reset (*Projector will ask for confirmation before restoring factory default settings.)*
	Test Patterns *<u>Off</u>, White, Black, Red, Green, Blue, Cyan, Magenta, Yellow, Chequer Board, Alignment Grid, Vertical Burst, Horizontal Burst, Color Bars*

Notes

The <u>underlined text</u> represents the factory default value for each setting.

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DIGITAL PROJECTION

REMOTE COMMUNICATIONS GUIDE

M-Vision Cine 320 3D series

High Brightness Digital Video Projector
16:9 widescreen display

Rev E July 2014

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Introduction

The projector can be controlled by using an external control system or a PC via an RS232 or LAN interface, using a terminal-emulation program, such as HyperTerminal.

Operation commands are used to simulate menu operations and determine the settings of the projector, and use the following format:

- All commands consist of ASCII text strings starting with the letters 'op', and ending with an ASCII Carriage Return character:
  `op <operation> <command> [CR]`
- The <operation> string determines which setting the command will affect. For example, "aspect" stands for aspect ratio.
- The <command> string can take one of the following formats:

Command	<command>	Description
Set	`= <value>`	Makes the setting take that value.
Get	`?`	Asks what the current value is. The value is returned as an ASCII text string.
Increment	`+`	Adds 1 to the current value.
Decrement	`–`	Subtracts 1 from the current value.
Execute	(none)	Performs an action.

Examples

`op aspect = 1 [CR]` sets the aspect ratio to TheaterScope.

`op aspect ? [CR]` asks what is the current aspect ratio.

`op bright + [CR]` increments the brightness setting.

`op contrast – [CR]` decrements the contrast setting.

`op resync [CR]` commands the projector to attempt to re-synchronise to the current input source.

Notes

*See how to connect to the projector using the RS232 or LAN input in the **Connection Guide**.*

Spaces in commands are necessary, therefore:

- `op aspect = 1` *is **correct**;*
- `opaspect=1` *is **incorrect**.*

Command Guide

<operation>	<command>	<values>	Notes
Main menu			
aspect	= ?	0 = 16:9 1 = TheaterScope 2 = 4:3 3 = 4:3 Narrow 4 = Native	
recall.mem	= ?	0 = Preset A 1 = Preset B 2 = Preset C 3 = Preset D 4 = Default	
save.mem	=	0 = Preset A 1 = Preset B 2 = Preset C 3 = Preset D	
overscan	= ?	0 = Off 1 = Crop 2 = Zoom	
s3d.mode	= ?	0 = 2D mode (3D mode off) 1 = 3D mode - SBS Dual (side by side)	If the projector is in one 3D mode and you intend to switch to the other 3D mode, you MUST first switch back to 2D and then switch to the other 3D mode. If you try switching straight from one 3D mode to the other, the projector will not execute the command.
s3d.chswap	= ?	0 = Normal 1 = Swap	If the 3D images are displayed in the wrong order, set this to Swap.
input	= ?	0 = HDMI 1 1 = HDMI 2 2 = RGB (D-sub) 3 = YPrPb 1 (RCA) 4 = YPrPb 2 (BNC)	
resync	(none)	(none)	

continued on next page...

Notes

<operation>	<command>	<values>	Notes
Image menu			
brightness	= ? + -	0 - 200	
contrast	= ? + -	0 - 200	
saturation	= ? + -	0 - 200	
hue	= ? + -	0 - 200	
sharpness	= ? + -	0 - 200	
nr	= ? + -	0 - 200	
Advanced Image menu			
colorspace	= ?	0 = Auto 1 = YPbPr (= REC709) 2 = YCbCr (= REC601) 3 = RGB-PC 4 = RGB-Video	
gamma	= ?	0 = CRT 1 = Film 2 = Video 3 = Punch 4 = Graphics	
color.temp	= ?	0 = 5500K 1 = 6500K 2 = 7500K 3 = 9300K 4 = Native	
color.gamut	= ?	0 = Auto 1 = REC709 2 = SMPTE C 3 = EBU 4 = Native	
bc	= ?	0 = Off 1 = On	BrilliantColor
adcontrast	= ?	0 = Off 1 = On	Adaptive Contrast

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Notes

<operation>	<command>	<values>	Notes
red.offset	= ? + -	0 - 200	
green.offset	= ? + -	0 - 200	
blue.offset	= ? + -	0 - 200	
red.gain	= ? + -	0 - 200	
green.gain	= ? + -	0 - 200	
blue.gain	= ? + -	0 - 200	
vert.pos	= ? + -	0 - 200	
hori.pos	= ? + -	0 - 200	
phase	= ? + -	0 - 200	
tracking	= ? + -	0 - 200	
sync.level	= ? + -	0 - 200	
color.mode	= ?	0 = Mode 1 1 = Mode 2	
System menu			
osd.timer	= ?	0 = Always On 1 = Display OSD for 10 sec. 2 = Display OSD for 30 sec. 3 = Display OSD for 60 sec.	The default setting is 30 seconds.
blank.screen	= ?	0 = Logo 1 = Black 2 = Blue 3 = White	
auto.poweroff	= ?	0 = Off 1 = On	
auto.poweron	= ?	0 = Off 1 = On	
altitude	= ?	0 = Auto 1 = High	
proj.mode	= ?	0 = Front Tabletop 1 = Front Ceiling 2 = Rear Tabletop 3 = Rear Ceiling	

continued on next page...

Notes

<operation>	<command>	<values>	Notes
Control menu			
trig1	= ?	0 = Screen 1 = 16:9 2 = TheaterScope 3 = 4:3 4 = 4:3 Narrow 5 = RS232 6 = On 7 = Off	0: Trigger occurs when the projector is in IMAGING mode.
trig 2	= ?	0 = Screen 1 = 16:9 2 = TheaterScope 3 = 4:3 4 = 4:3 Narrow 5 = RS232 6 = On 7 = Off	0: Trigger occurs when the projector is in IMAGING mode.
auto.source	= ?	0 = Off 1 = On	
ir.enable	= ?	0 = Disable 1 = Enable	IR Remote Control enable
Service menu			
model.name	?	<string>	
soft.version	?	<string>	
act.source	?	0 = HDMI 1 1 = HDMI 2 2 = RGB (D-sub) 3 = YPrPb 1 (RCA) 4 = YPrPb 2 (BNC)	Active Source
signal	?	<string>	
pixel.clock	?	<number>	MHz
h.refresh	?	<number>	kHz
v.refresh	?	<number>	Hz
lamp.hours	?	<number>	

continued on next page...

Notes

<operation>	<command>	<values>	Notes
total.hours	?	<number>	
factory.reset	(none)	(none)	
pattern	= ?	0 = Off 1 = White 2 = Black 3 = Red 4 = Green 5 = Blue 6 = Cyan 7 = Magenta 8 = Yellow 9 = Chequer Board 10 = Alignment Grid 11 = Vertical Burst 12 = Horizontal Burst 13 = Color Bars	
Miscellaneous commands			
blue.only	=	0 = Off 1 = On	
powon	(none)	(none)	Power on
powoff	(none)	(none)	Power off (puts projector into Standby mode)
status.check	?	0 = standby 1 = warm up 2 = imaging 3 = cooling 4 = error	
frame.rate	= ?	0 = Auto 1 = 48 Hz 2 = 50 Hz 3 = 60 Hz	

Notes